CLAIMS

1. An image heating device comprising:

a belt having a heat resistance;

a rotatable heat-generating member, which is at least partially conductive and arranged in contact with an inner peripheral surface of the belt;

a fixing roller, the fixing roller and the heat-generating member movably suspending the belt therebetween; and

a magnetization means for heating the heat-generating member through magnetization, which is arranged outside the heat-generating member;

wherein the magnetization means heats the heat-generating member through magnetization after a rotating operation of the heat-generating member is started.

2. An image heating device comprising:

a rotatable belt having a heat resistance;

a heat-generating member, which is at least partially conductive and arranged in contact with an inner peripheral surface of the belt;

a fixing roller, the fixing roller and the heat-generating member movably suspending the belt therebetween; and

a magnetization means for heating the heat-generating member through magnetization, which is arranged outside the heat-generating member;

wherein the magnetization means heats the heat-generating member through magnetization only when a rotating operation of the belt is being performed.

3. The image heating device according to claim 1 or 2,

wherein a portion of the heat-generating member to be heated by the magnetization means has a certain curvature, and the belt is heated by heat from the portion with the certain curvature.

4. The image heating device according to claim 1 or 2,

wherein a glass transition point of the belt is 200°C to 500°C.

5. The image heating device according to claim 1 or 2,

wherein not more than 2/3 of a total outer area of the heat-generating member is heated by the magnetization means.

6. The image heating device according to claim 1 or 2,

wherein a thermal capacity of the heat-generating member is not more than 60 J/K.

7. The image heating device according to claim 1 or 2,

wherein the magnetization means is a magnetization coil.

8. The image heating device according to claim 1,

wherein the rotating operation of the heat-generating roller is terminated after the magnetization of the heat-generating roller by the magnetization means is terminated.

9. The image heating device according to claim 1 or 2,

wherein the belt is rotated at least until a furthest upstream point in a rotating direction of a portion in which the belt and the heat-generating member both at rest are in contact with each other at a certain curvature separates from the heat-generating member before heating of the heat-generating member is started.

10. An image heating device comprising:

a belt having a heat resistance;

a first support roller arranged in contact with an inner peripheral surface of the belt;

a second support roller, the second support roller and the first support roller movably suspending the belt therebetween; and

a magnetization means for heating at least one of the first support roller and the belt through magnetization, which is arranged outside the belt looped around the first support roller;

wherein the belt is rotated at least until a furthest upstream point in a rotating direction of a portion in which the belt and the first support roller both at rest are in contact with each other at a certain curvature separates from the first support roller before heating of the heat-generating member is started.

11. An image heating device comprising:

a belt having a heat resistance;

a rotatable heat-generating member, which is at least partially conductive and arranged in contact with an inner peripheral surface of the belt;

a fixing roller, the fixing roller and the heat-generating member movably suspending the belt therebetween;

a pressure roller arranged in opposition to the fixing roller, the pressure roller and the belt forming a nip portion therebetween; and

a magnetization means for heating the heat-generating member through magnetization, which is arranged outside the heat-generating member;

wherein heating of the heat-generating member by the magnetization means is terminated while a recording material is passing through the nip portion.

12. The image heating device according to claim 11,

wherein heating of the heat-generating member by the magnetization means is terminated when a distance between the nip portion and a terminal end of the recording material becomes shorter than a distance between a point where the belt separates from the heat-generating member and the nip portion.

13. An image heating device comprising:

a magnetization means; and

a rotatable conductive heat-generating body to be heated by the magnetization means,

the magnetization means heating the conductive heat-generating body through magnetization after a rotating operation of the conductive heat-generating body is started,

wherein the conductive heat-generating body is rotated at a first speed when a temperature thereof is less than a predetermined set temperature and at a second speed when a temperature thereof is not less than the predetermined set temperature.

14. The image heating device according to claim 13,

wherein the magnetization means is a magnetization coil for heating

the conductive heat-generating body through magnetization, which is arranged outside the conductive heat-generating body.

15. The image heating device according to claim 13 further comprising:

a belt formed of a heat-resistant resin, whose inner peripheral surface is in contact with the conductive heat-generating body; and

a fixing roller, the fixing roller and the conductive heat-generating body movably suspending the belt therebetween.

16. The image heating device according to claim 13,

wherein the first speed is not more than 2/3 of the second speed.

17. An image heating device comprising:

a magnetization means; and

a rotatable conductive heat-generating body to be heated by the magnetization means,

the magnetization means heating the conductive heat-generating body through magnetization after a rotating operation of the conductive heat-generating body is started,

the rotating operation of the conductive heat-generating body being terminated after the heating of the conductive heat-generating body by the magnetization means is terminated,

wherein the conductive heat-generating body is rotated at a speed slower than that at a time of routine operations during a standby period.

18. The image heating device according to claim 17,

wherein the magnetization means is a magnetization coil for heating the conductive heat-generating body through magnetization, which is arranged outside the conductive heat-generating body.

19. The image heating device according to claim 17 further comprising:

a belt formed of a heat-resistant resin, whose inner peripheral surface is in contact with the conductive heat-generating body; and

a fixing roller, the fixing roller and the conductive heat-generating body movably suspending the belt therebetween.

20. The image heating device according to claim 17,

wherein the conductive heat-generating body is rotated at a speed not more than 1/2 of a speed at a time of routine operations during a standby period.

21. The image heating device according to claim 17,

wherein the conductive heat-generating body is rotated intermittently during a standby period.

22. The image heating device according to claim 17,

wherein, during a standby period, the conductive heat-generating body starts to rotate when a temperature thereof becomes less than a first set temperature and stops rotating immediately or after an elapse of a certain time period when a temperature thereof becomes not less than a second set temperature.

23. The image heating device according to claim 17,

wherein, during a standby period, an output lower than that during a warm-up period is applied to the magnetization means.

24. An image heating device comprising:

a belt having a heat resistance;

a rotatable heat-generating member arranged in contact with an inner peripheral surface of the belt;

a fixing roller, the fixing roller and the heat-generating member movably suspending the belt therebetween; and

a pressing member arranged in contact with an outer peripheral surface of the belt;

wherein a temperature sensor is provided so as to be in contact with an inner peripheral surface of the belt and in opposition to the pressing member between the heat-generating member and the fixing roller.

25. The image heating device according to claim 24 further comprising:

a magnetization means arranged outside the heat-generating member;

the heat-generating member being at least partially conductive,

the heat-generating member being heated by the magnetization means through electromagnetic induction.

26. The image heating device according to claim 24,
wherein the pressing member is an oil application member.

27. The image heating device according to claim 24,
wherein the pressing member is a cleaning member.

28. An image forming apparatus comprising:
an image forming means for forming an unfixed image onto a recording material and having the unfixed image carried thereon; and
a fixing device for fixing the unfixed image onto the recording material,
wherein an image heating device according to any one of claims 1 to 27 is used as the fixing device.

29. An image forming apparatus comprising:
a heat-generating member;
a magnetization coil for heating the heat-generating member through electromagnetic induction, which is arranged in opposition to the heat-generating member;
an inverter circuit for supplying a high-frequency current to the magnetization coil;
a control unit for controlling an operation of the inverter circuit; and
a temperature sensor for transmitting a signal for temperature control to the control unit, which is arranged in the heat-generating member at a portion other than a portion that is heated most by the magnetization coil.

30. The image forming apparatus according to claim 29 further comprising:
a driving source for rotationally driving the heat-generating member; and
a rotation detecting means for detecting rotation of the heat-generating member,
the heat-generating member being rotatable,
the magnetization coil being arranged in opposition to a peripheral surface of the heat-generating member.

31. The image forming apparatus according to claim 29 further comprising:

a rotatable member, which rotates while keeping in contact with the heat-generating member;

a driving source for rotationally driving the rotatable member; and

a rotation detecting means for detecting rotation of the rotatable member,

the heat-generating member being at least partially formed of a conductive material.

32. The image forming apparatus according to claim 29 further comprising:

a rotatable member, which rotates while keeping in contact with the heat-generating member;

a driving source for rotationally driving one of the heat-generating member and the rotatable member without using the other;

a rotation detecting means for detecting rotation of the heat-generating member or the rotatable member,

the heat-generating member being rotatable,

the magnetization coil being arranged in opposition to a peripheral surface of the heat-generating member.

33. The image forming apparatus according to claim 29 further comprising:

a rotatable member, which rotates while keeping in contact with the heat-generating member;

a driving source for rotationally driving one of the heat-generating member and the rotatable member without using the other;

a driven member, which is driven via the heat-generating member or the rotatable member, and

a rotation detecting means for detecting rotation of the driven member,

the heat-generating member being rotatable,

the magnetization coil being arranged in opposition to a peripheral surface of the heat-generating member.

34. The image forming apparatus according to any of claims 30 to 33,

wherein an operation of the inverter circuit is started by the control unit after a detecting signal is produced by the rotation detecting member.

35. The image forming apparatus according to any of claims 30 to 33,

wherein an operation of the inverter circuit is stopped by the control unit when a signal from the rotation detecting member is not obtained for a predetermined time period.

36. The image forming apparatus according to any of claims 31 to 33,

wherein rotation of the heat-generating member and the rotatable member is performed along with an operation of the inverter circuit.

37. The image forming apparatus according to claim 29 further comprising

a fixing unit comprising the heat-generating member,

wherein the fixing unit is freely attachable/detachable to/from an image forming apparatus main body.

38. An image forming apparatus comprising:

a fixing belt;

first and second support rollers for rotatably supporting the fixing belt;

a magnetization coil for heating at least one of the first support roller and the fixing belt through electromagnetic induction, which is arranged in opposition to the fixing belt looped around the first support roller;

an inverter circuit for supplying a high-frequency current to the magnetization coil;

a control unit for controlling an operation of the inverter circuit; and

a temperature sensor for transmitting a signal for temperature control to the control unit, which is arranged in at least one of the first support roller and the fixing belt at a portion other than a portion that is heated most by the magnetization coil.

39. The image forming apparatus according to claim 38 further comprising:

a pressure member, which rotates while being pressed against the second support.roller via the fixing belt;

a driving means for rotationally driving the pressure member; and

a rotation detecting means for detecting rotation of the pressure member.

40. The image forming apparatus according to claim 38 further comprising:

a driving means for rotationally driving at least one of the first

support roller and the second support roller without using the fixing belt; and

a rotation detecting means for detecting rotation of the support roller that is driven by the driving means.

41. The image forming apparatus according to claim 38 further comprising:

a pressure member, which rotates while being pressed against the second support roller via the fixing belt;

a driving means for rotationally driving one of the first support roller and the second support roller without using the fixing belt; and

a rotation detecting means for detecting rotation of the support roller that is driven via rotation of the fixing belt.

42. The image forming apparatus according to claim 38 further comprising:

a pressure member, which rotates while being pressed against the second support roller via the fixing belt;

a driving means for rotationally driving one of the first support roller and the second support roller without using the fixing belt; and

a rotation detecting means for detecting rotation of the pressure member.

43. The image forming apparatus according to any of claims 40 to 42,

wherein the support roller that is rotationally driven without using the fixing belt does not generate heat.

44. The image forming apparatus according to claim 38 further comprising:

a pressure member, which rotates while being pressed against the second support roller via the fixing belt;

a driving means for rotationally driving the pressure member; and

a rotation detecting means for detecting rotation of a member that rotates following the pressure member.

45. The image forming apparatus according to any of claims 39 to 42,

wherein an operation of the inverter circuit is started by the control unit after a detecting signal is produced by the rotation detecting means.

46. The image forming apparatus according to any of claims 39 to 42,

wherein an operation of the inverter circuit is stopped by the control

unit when a signal from the rotation detecting means is not obtained for a predetermined time period.

47. The image forming apparatus according to claim 38 further comprising:

a fixing unit comprising the fixing belt, the first and second support rollers,

wherein the fixing unit is freely attachable/detachable to/from an image forming apparatus main body.

48. An image forming apparatus comprising:

a heat-generating member, which is at least partially formed of a conductive material;

a rotatable detecting member;

a magnetization coil for heating the heat-generating member through electromagnetic induction, which is arranged in opposition to a peripheral surface of the heat-generating member;

an inverter circuit for supplying a high-frequency current to the magnetization coil;

a control unit for controlling an operation of the inverter circuit;

a temperature sensor for transmitting a signal for temperature control to the control unit, which is arranged in the heat-generating member at a portion other than a portion that is heated most by the magnetization coil;

a rotating means for rotationally driving the rotatable detecting member directly or indirectly; and

a rotation detecting means for detecting rotation of the rotatable detecting member,

wherein a fixing unit comprising at least the heat-generating member and the rotatable detecting member is freely attachable/detachable to/from an image forming apparatus main body.

49. The image forming apparatus according to claim 48,

wherein the rotation detecting means is provided in the fixing unit.

50. The image forming apparatus according to claim 48,

wherein the rotation detecting means is provided in the image forming apparatus main body.